

CLAIMS

What is claimed is:

1. A fuse structure comprising:
 - an insulator layer;
 - a plurality of fuse electrodes extending through said insulator layer to an underlying wiring layer; and
 - a fuse element connected to said electrodes, wherein said fuse element is positioned external to said insulator, with a gap juxtaposed between said insulator and said fuse element.
2. The fuse structure in claim 1, wherein said fuse element is electroplated.
3. The fuse structure in claim 1, wherein said fuse element is electroless plated.
4. The fuse structure in claim 1, wherein said fuse element has a thickness in the range of 100 angstroms to 350 angstroms.
5. The fuse structure in claim 1, wherein said plurality of fuse electrodes are diametrically opposed to one another.

6. The fuse structure in claim 1, wherein said fuse element is perpendicularly disposed above said plurality of fuse electrodes.

7. The fuse structure in claim 1 further comprising an interface wall, wherein said interface wall further comprises a first side wall, a second side wall, and an inner wall, wherein said inner wall is disposed within said gap.

8. A fuse structure comprising:
an insulator layer;
a plurality of fuse electrodes extending through said insulator layer to an underlying wiring layer; and
a fuse element connected to said electrodes, wherein said fuse element is positioned external to said insulator, wherein said fuse element is perpendicularly disposed above said plurality of fuse electrodes, wherein said plurality of fuse electrodes are diametrically opposed to one another.

9. The fuse structure of claim 8, wherein said fuse element is one of electroplated and electroless plated.

10. The fuse structure in claim 8 further comprising an interface wall, wherein said interface wall further comprises a first side wall, a second side wall, and an inner wall.

1 11. A method of producing a fuse structure, said method comprising:
2 applying an insulator layer over a wiring layer; wherein said insulator layer comprises an
3 upper layer, a middle layer, and a bottom layer;
4 creating voids in said insulating layer and reducing a height of a fuse area of said upper
5 layer between said voids;
6 filling said voids and said fuse with a fuse material to form fuse electrodes in said voids
7 and a fuse element above said fuse area.

1 12. The method of claim 10 further comprising:
2 removing said upper layer of said insulator layer, wherein said removing forms a gap
3 between said fuse element and said insulator layer;
4 electroplating said fuse element; and
5 applying an upper interface wall on said insulator layer.

1 13. The method of claim 11, wherein said upper layer and said bottom layer of said insulator
2 layer comprises silicon dioxide.

1 14. The method of claim 11, wherein said middle layer of said insulator layer comprises silicon
2 nitride.

1 15. The method of claim 11, wherein said step of creating voids in said insulator layer further
2 comprises creating a plurality of voids from the upper layer of the insulator layer to an upper
3 portion of the wiring layer.

1 16. The method of claim 11, wherein said fuse electrodes extend through said insulator layer
2 to an underlying wiring layer.

1 17. The method of claim 16, wherein said fuse electrodes are diametrically opposed to one
2 another.

1 18. The method in claim 16, wherein said fuse element is perpendicularly disposed above said
2 plurality of fuse electrodes.

1 19. The method of claim 12, wherein said gap is confined by said plurality of fuse electrodes,
2 said fuse element, and said middle layer of said insulator layer.

1 20. The method of claim 12, wherein said upper interface wall further comprises a first side
2 wall, a second side wall, and an inner wall, wherein said inner wall is disposed within said gap.